LASER CUTTER SAFETY TRAINING

Hazards associated with Lasers:

Lasers used to cut modeling materials or engrave objects have three potential hazards that operators must be aware of, the potential for the laser beam to:

1. Cause skin and corneal burns –
    - The laser beam, if directed into the eye, can cause serious corneal burns, potential impairing ones vision or causing blindness. The beam can also cause severe skin burns.
    - These hazards are addressed by enclosing the laser so the operator can not come into contact with the beam.
    - Interlocks are used to prevent access to the beam. The interlocks helps shut down the laser if the cover or doors to the laser are opened while in operation. NEVER tamper with the interlocks
2. Start a fire
    - A laser beam can also initiate a fire if the speed of the cut is too slow or the laser power is set too high. Laser users must know to properly set up a laser as well as how to use a fire extinguisher.
    - Before using a laser, one must be aware of the location of the fire extinguisher and its use.
3. Release toxic combustion products
    - The cutting of material by a laser generates products of combustion, which are irritating to the eyes, nose and throat and may release toxic vapours and aerosols.
    - Plastic, acrylic and melamine materials create the most toxic by-products.
    - A local exhaust ventilation system is incorporated into each laser which captures and removes the gasses and particulates produced.
    - The ventilation system is interlocked with the laser and turns on when the laser is turned on.
    - DO NOT OPERATE THE LASER IF THE VENTILATION SYSTEM IS NOT OPERATING.

Signing up to use a Laser:

The laser is available for use by registered users. To become a registered user and have access to the laser cutter you must participate in this training. Registered users may reserve the laser on Noisebridge calendar or use the laser as a “walk in” if no one is using it.

Material Cutting Guidelines:

- Laser power will change over the course of the day. The settings above are for reference, and you may need to adjust them according to the laser’s current power level. You can adjust the settings on the laser cutter while it is cutting to fine-tune your cuts.
- Increasing the power causes deeper cuts but reduces detail. Likewise, reducing the speeds causes deeper cuts but reduces detail and increases cutting time.
- Increasing the PPI (pulses per inch) increases the burning or melting effect, and can produce finer detail if the speed is not too fast. PPI has no effect on running time and very little effect on depth. Very low PPI settings are used to perforate material.
- When cutting plastic, remove the original clear masking, as it does not react well with the laser.
- If cutting material 1/4” or thicker, use the laser to score the material, then do the actual cutting with a band saw.

Using the Laser Cutter:

- Preparing the cut
- Restrictions on the materials
- Setting the print parameters
- Cutting/engraving with the laser
- Retrieving your material
- Shutting down the laser.

Emergencies & Notifications:

There are a few conditions or incidents must be reported to someone a Noisebridge staff immediately, these include:

1. A damaged or cracked Plexiglas window
2. A fire
3. The laser is not working properly.

If you are uncertain about any aspect of the laser cutter's operation, contact the Noisebridge staff for assistance.

http://ehs.yale.edu/training/embedded-laser-safety-training-school-architecture